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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,285	01/11/2002	Nicholas F. DiCamillo	22-0191	8420

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EXAMINER

DEAN, RAYMOND S

ART UNIT

PAPER NUMBER

2684

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/044,285

Applicant(s)

DICAMILLO ET AL.

Examiner

Raymond S Dean

Art Unit

2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed November 23, 2004 have been fully considered but they are not persuasive.

Examiner respectfully disagrees with Representative's assertion on Page 6, Section I, 3rd Paragraph "However Thompson is completely silent on HPA redundancy pools". Thompson teaches a reconfigurable payload with flexible antenna coverage patterns. The payload can provide flexible coverage patterns thus there will be unique combinations of downlink antenna apertures such that said flexible coverage patterns can occur. Thompson also teaches HPA redundancy thus there will be HPA redundancy pools providing downlink feed signals (See Figure 8, Column 7 lines 49 – 67).

Examiner respectfully disagrees with Representative's assertion on Page 7 1st Paragraph "However, nowhere does Thompson disclose that each of the multiple". The finite number of apertures will be the apertures available for each redundancy pool because the required minimum length of the waveguides will not allow said finite number to change.

Examiner respectfully disagrees with Representative's assertion on Page 7, 2nd Paragraph "However, Thompson is silent as to the number of phased array antennas to which each HPA". Thompson teaches a plurality of phased array antennas thus a plurality of antenna apertures. The plurality comprises 2 or more than 2.

Examiner respectfully disagrees with Representative's assertion on Page 8, 1st Paragraph "Thompson, however, is silent as to the arrangement of HPA redundancy pool locations such that a waveguide run length.....". Thompson as discussed above, teaches a unique combination of downlink antenna apertures. The fact that the satellite is optimized to work in the Ku-band means that the length of the waveguides from the HPAs to the antennas will be a minimum length thus Claim 4 is anticipated by Thompson.

Examiner respectfully disagrees with Representative's assertion on Page 8, 2nd Paragraph "Thompson is silent as to the failure of HPAs, and thus does not teach that a HPA". The fact that there is redundancy means that there will be spare HPAs to drive a downlink signal if an HPA fails thus Thompson anticipates HPAs that fail.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 – 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Thompson et al. (US 6,438,354).

Regarding Claim 1, Thompson teaches a communications satellite comprising: a plurality of available downlink antenna apertures, each downlink antenna aperture transmitting a plurality of downlink feed signals (Figure 8 Section IV, Column 3 lines 65 – 67, Column 4 lines 1 – 2, phased array antennas have apertures); a plurality of switching devices to selectively switch a plurality of input signals and provide a plurality of switched signals (Figure 8 Section II); and a plurality of high power amplifiers (HPAs), each one of said plurality of switched signals being received and driven by one of said plurality of HPAs into a corresponding one of said plurality of switching devices and downlink feed signals (Figure 8 Sections III – IV, Column 7 lines 64 - 67), wherein said plurality of HPAs are organized into multiple HPA redundancy pools, each one of the multiple HPA redundancy pools providing downlink feed signals to a respectively unique combination of said plurality of downlink antenna apertures (Column 7 lines 12 – 23, lines 49 – 51, since the satellite can generate multiple beams on the downlink and since there is HPA redundancy there will be inherent redundancy pools for the transmissions of multiple beams on the downlink).

Regarding Claim 2, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson further teaches wherein each one of said multiple HPA redundancy pools provides downlink feed signals to the same number of downlink antenna apertures as the other ones of said multiple HPA redundancy pools (Column 3 lines 52 – 53, Column 7 lines 12 – 23, lines 49 – 51, since the satellite is optimized to work in the Ku-band and since there are redundancy pools the length of the waveguides from the

HPAs to the antennas will be a minimum length thus allowing only a finite number of apertures to be used for downlink transmission for each redundancy pool).

Regarding Claim 3, Thompson teaches all of the claimed limitations recited in Claim 2. Thompson further teaches wherein said same number of downlink antenna apertures is between 2 and $N-1$, where N is the number of available downlink antenna apertures, greater than or equal to 3 (Figure 8 Section IV, Column 3 lines 65 – 67, Column 4 lines 1 – 2, since there are plurality of phased array antennas the number of downlink antenna apertures will be between 2 and $N - 1$).

Regarding Claim 4, Thompson teaches all of the claimed limitations recited in Claim 2. Thompson further teaches wherein each one of said HPA redundancy pools is located so that the waveguide run length between it and the furthest downlink antenna aperture of its unique combination of downlink antenna apertures is minimized (Column 3 lines 52 – 53, Column 7 lines 12 – 23, lines 49 – 51, since the satellite is optimized to work in the Ku-band and since there are redundancy pools the length of the waveguides from the HPAs to the antennas will be a minimum length thus allowing only a finite number of apertures to be used for downlink transmission for each redundancy pool).

Regarding Claim 5, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson further teaches a plurality of uplink antenna apertures to receive a plurality of uplink beams (Figure 8 Section I, Column 3 lines 37 – 41, lines 65 – 67).

Regarding Claim 6, Thompson teaches all of the claimed limitations recited in Claim 5. Thompson further teaches wherein each of said plurality of uplink beams from

corresponding ones of said uplink antenna apertures are provided as said input signals to said plurality of switching devices (Figure 8 Section II).

Regarding Claim 7, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson further teaches wherein said signals relate to broadband communications (Column 3 lines 37 – 41).

Regarding Claim 8, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson further teaches a control unit to control operation of at least said plurality of switching devices such that each input signal is routed to a desired downlink antenna aperture (Figure 8 Section II, Column 7 lines 45 – 51, since the signals are power divided and channelized by the switching devices there will inherently be a control unit that controls the operation of said switching devices).

Regarding Claim 9, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson further teaches wherein the event that one of the HPAs in a HPA redundancy pool fails, one of the other HPAs in said HPA redundancy pool drives the downlink feed signal of said one of the HPAS (Column 7 lines 12 – 23, lines 49 – 51, the fact that there is redundancy means that there will be spare HPAs for transmission on the downlink).

Regarding Claim 10, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson further teaches wherein each of the HPA redundancy pools further comprises a plurality of hardware grouping strings, wherein the plurality of hardware grouping string numbers greater than the number of switched signals (Figure 8, Column

7 lines 47 – 51, there will be up to 36 switching signals, which means that there can be less than 36 switching signals, and 36 HPAs).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US 6,438,354) in view of Sarraf et al. (US 6,175,719).

Regarding Claim 11, Thompson teaches all of the claimed limitations recited in Claim 10. Thompson further teaches wherein each hardware grouping string comprises a linearized channel amplifier and a traveling wave tube amplifier (Figure 8, Column 7 lines 56 – 63).

Thompson does not teach a frequency upconverter.

Sarraf teaches a frequency upconverter (Figure 2, Column 3 lines 21 – 22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the frequency upconverter taught in Sarraf in the payload of Thompson for the purpose of providing downlink signals in the proper frequency range as taught by Sarraf.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US 6,438,354) in view of Ferguson (4,780,685).

Regarding Claim 12, Thompson teaches all of the claimed limitations recited in Claim 10. Thompson further teaches wherein the plurality of hardware grouping strings comprise active strings and spare strings (Column 7 lines 12 – 23, lines 49 – 51, the fact that there is redundancy means that there will be active and spare HPAs for transmission on the downlink).

Thompson does not teach wherein the total number of spare strings numbers less than the total number of active strings.

Ferguson teaches wherein the total number of spare strings numbers less than the total number of active strings (Column 4 lines 48 – 50, Column 9 lines 34 – 38).

It would have been obvious to one of ordinary skill in the art to use the sparing method taught by Ferguson in the system of Thompson for the purpose of creating a payload that can provide downlink signals with adequate power despite a reduced power configuration as taught by Ferguson.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond S Dean whose telephone number is 703-305-8998. The examiner can normally be reached on 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay A Maung can be reached on 703-308-7745. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**NICK CORSARO
PRIMARY EXAMINER**



**Raymond S. Dean
February 24, 2005**